THE UNIVERSITY OF MELBOURNE

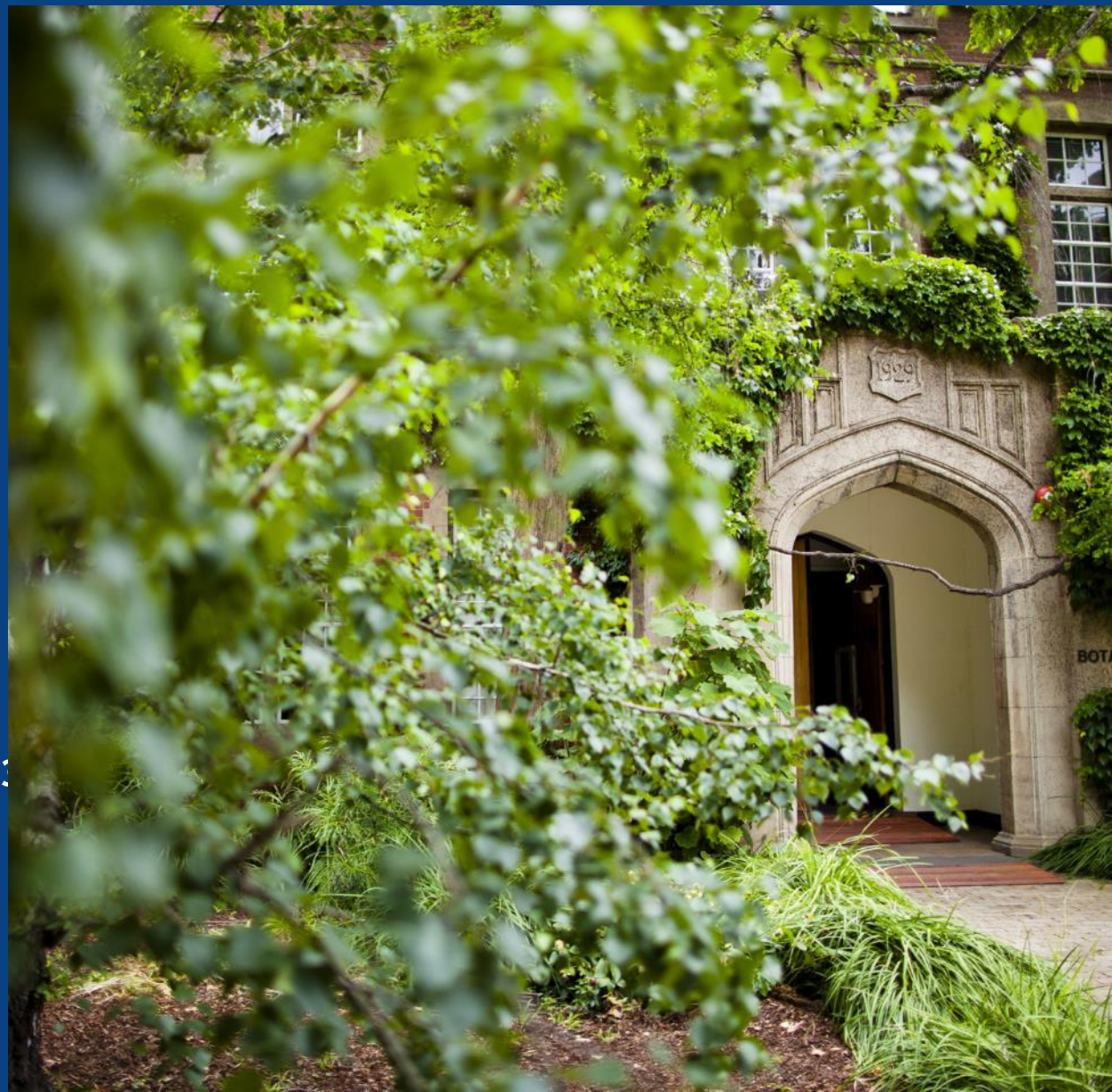
COMP 90048 Declarative Programming Workshop 1 (week2)

2019 semester 1

by Wendy Zeng

Tutorial : Tue 18:15 - 19:15 221 Bouverie St, room B11

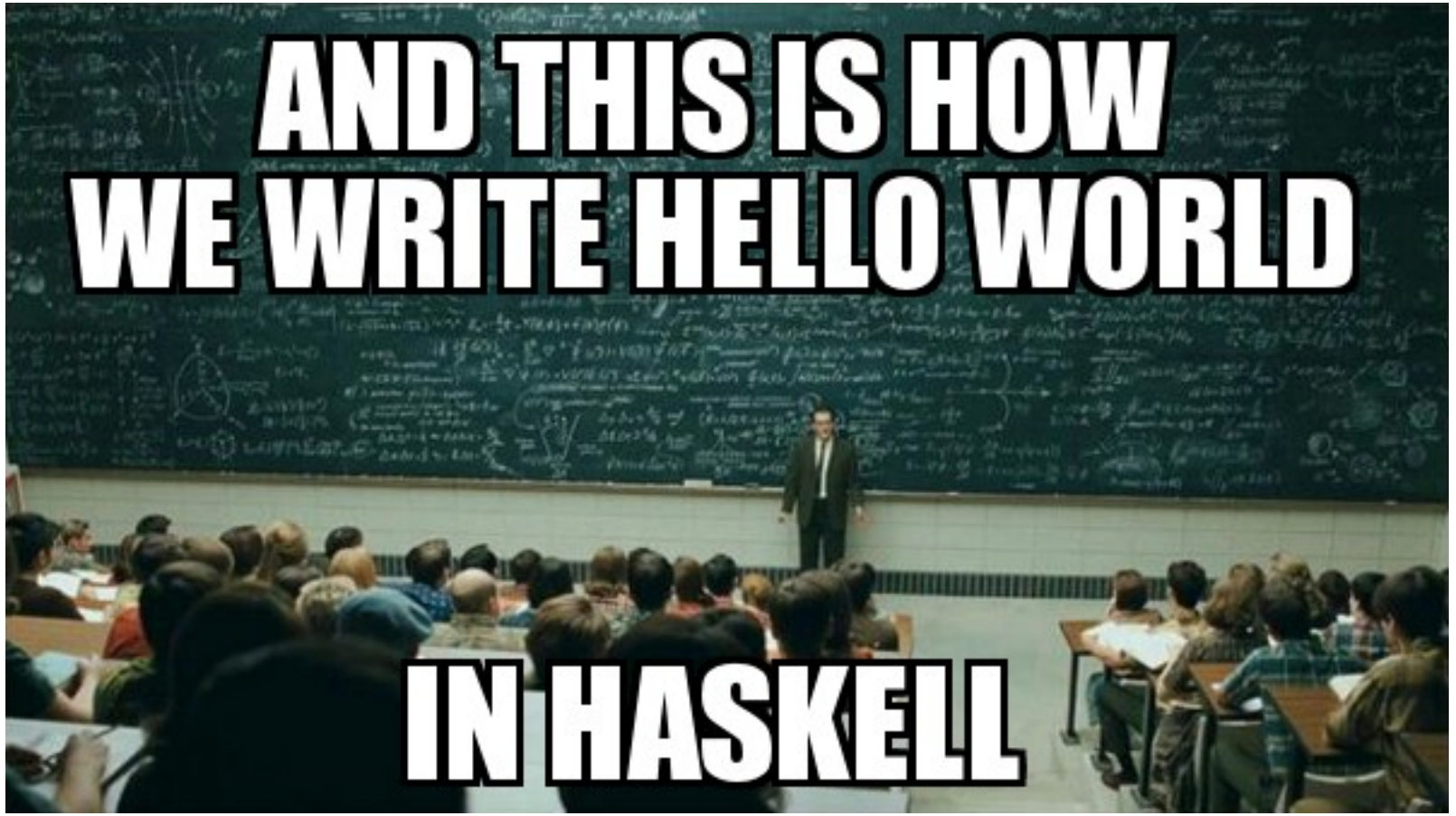
Wed 17:15 - 18:15 201 Bouverie St, room B132



Outline

1. Subject intro
2. DP – Why and What
3. DP – characteristics (side effects and purity)
4. Pattern Matching
5. List Operations

DP – Why and What



DP – Characteristics

- Higher Order Implementations
  - Higher order functions (from ws4)
  - **Purity**
    - **No side effects** (modify global/static vars/args, I/O, exceptions)
  - **Immutable data**
  - **Referential Transparency**
  - Lazy Evaluation (from ws 10)

Recursion & Pattern Matching

- Put it in a simple way:
  - **A function that calls itself**
  - double (double (double (double 1)))
  - reduce (reduce (reduce (reduce())))
- Base case
- Recursive case

Recursion & Pattern Matching

- More in workshop 3 & 4
- What:
  - **Matching values against patterns**
  - Or deconstructing a value into its components (later on)
  - **Order** DOES matter
- Why:
  - Recursive data structure -> recursive function pattern

List Operations

- List Patterns/Representations
- List Traversal
- Basic operations:
  - Head/Tail - Q5
  - Append (concatenation) - Q6
  - Reverse (efficiency?) - Q7
  - Length
  - Sum
  - Indexing - Q8

THE UNIVERSITY OF MELBOURNE

Thank you

Wendy.zeng@unimelb.edu.au

By Wendy Zeng